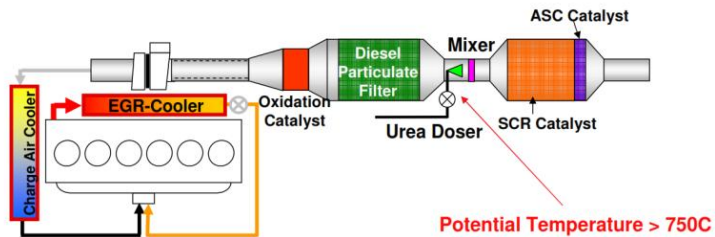
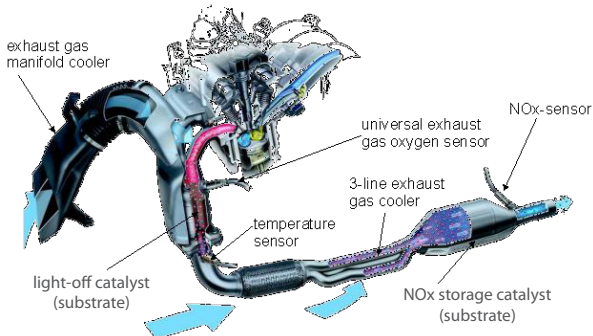
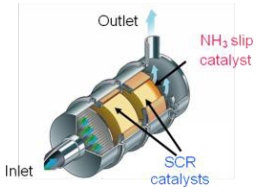
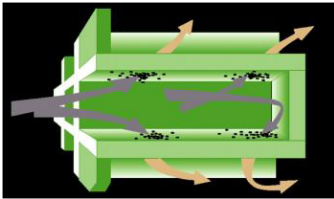


Emission Controls Manufacturers Association



**After Treatment
Technology**



Founder Members:

- BASF Catalysts (India) Pvt. Ltd.
- Corning India
- Emitec Emission Control Technologies India Pvt. Ltd.
- Johnson Matthey India Pvt. Ltd.
- NGK Insulators Ltd.
- Sud-Chemie India Pvt. Ltd.
- Umicore Autocat India Pvt. Ltd.



Associate Members:

- Alantum Europe GmbH
- Albonair India
- Cummins Emission Solutions
- Ecocat India Pvt. Ltd
- HJS Fahrzeugtechnik GmbH & Co KG
- Ibiden India
- Mitsui Kinzoku Components India Pvt. Ltd.
- Nippon Steel & Sumikin Materials India Pvt. Ltd.
- Tenneco Automotive India



Global Manufacturers of after-treatment systems in the field of Vehicular Pollution Control came together to create a platform in India to share their emission control technologies with the interest of public in large in line with the European and the American after-treatment Manufacturers Association. Accordingly, the eight leading organizations in the field of Emission Control Technology set out and established “Emission Controls Manufacturers Association (ECMA)”, a nonprofit association. ECMA got an approval from the Registrar as a Non Profit Association and was registered on 13th November 2001 under Registrar of Societies Act XXI of 1860, at New Delhi. The Association started its function from year 2002.

It represents world’s leading manufacturers of Emission Control equipment for Automotive and Non-Road engines in India. Our member companies have been operating worldwide and have rich experience and a proven track record in the development, testing and manufacturing of catalytic converters and catalyst / heat tubes for 2 – Wheelers / Cars / LCV’s / HCV’s manufacturers and Off-Road application like Generators (Petrol / Diesel). ECMA Members parent organizations jointly investing “Billions of Dollars” in R&D. Members’ technology is incorporated in the exhaust emission control system on all new cars and light / heavy commercial vehicles, as well as various two wheelers like scooters, motorcycles and mopeds in India.

ECMA’s Vision:

“We are Committed Collaboratively to Lead India towards Cleaner Air”.

ECMA’s Mission:

- ***To work with the Industry, Government, Regulators, Oil Companies and Public at large to be a credible source of knowledge on emission control.***
- ***To strive to increase awareness of the need and to provide relevant technical solutions for emission control.***
- ***To achieve this through assimilation of technologies for emission control; providing and disseminating knowledge; enabling legislation, implementation and test procedures.***

We remain faithful to our pledge and partnership with the people, industry and government to solve some of the most critical problems caused by on road and off road vehicular pollution. We are continuing our forward march, maintaining high professional standards and a strong commitment towards a pollution free world.

ECMA Journey so far....

1. Eight Leading Organizations in the field of Emission Control Technology set out to establish **“Emission Controls Manufacturers Association (ECMA)”** a Non Profit Association.
2. The Association was registered on 13th November 2001 under Registrar of Societies Act XXI of 1860, at New Delhi.
3. ECMA's 1st Office bearers at the time of formation were Mr. R. P. Mital (President) and Mr. R. S. Mani (Vice President & Treasurer / Secretary)
4. ECMA's Office established at Nehru Place, New Delhi from 27th March 2003.
5. Dr. V. Rajagopalan, then Chairman CPCB was the Chief Guest at ECMA's Inaugural Function held at New Delhi on 26th August 2004.
6. Launched **“Worldwide Emission Standards 2004”** in CD.
7. Regd. Office shifted to Nehru Place, New Delhi on 1st September 2004.
8. Organized 1st International Conference on **“Asian Vehicle Emission Control Conference 2006”** at Jaipur in association with AECC & MECA on 20th - 22nd September 2006.
9. **Launched the Brand Emission Control Technology (ECT)**. The 2nd International Conference **“Emission Control Technology to Meet Year 2010 Norms and Beyond”** ECT 2007 was organized at New Delhi on 10th - 11th October 2007.
10. ECMA participated as Sponsor at **“TECHNEX 2008”** Conference organized by SIAM.
11. ECMA honoured to become a Member of the prestigious **“Standing Committee on Emission (SCOE)”** on 29th December 2009.
12. **“Emission Control Technologies to Improve Ambient Air Quality - Path Forward for India”** ECT 2009 International Conference was organized at New Delhi on 6th - 7th November 2009.
13. 1st Roundtable Conference on **“Impact of PM Emissions and its Management”** at New Delhi on 7th September 2010.
14. ECMA sponsored Best M. Tech Project of ARAI Academy 2011 batch and the Best M. Tech. Project was awarded Rs. 1.00 Lac during ECT 2011.
15. The 2nd Roundtable Conference on **“After Treatment System / Design for BS - V Compliance”** at New Delhi on 6th September 2011.
16. **“After treatment Technologies 2013 and Beyond”** ECT 2011 International Conference was organized at New Delhi on 9th - 10th November 2011.
17. **“Learning Initiative Project”** was launched for PhD and M. Tech. students in March 2012. Three projects written by students were awarded at the 1st Off Road Conference.
18. 1st International Off Road Conference on **“Pathways to Meet Future Emission Standards for Off-Road Engines”** was organized on 3rd - 4th September 2012 at New Delhi.
19. **“ECMA Celebrates Successful 1st Decade”** from 16th to 18th December 2012 at Goa.
20. ECMA represented at the **“Expert Committee on Auto Fuel Vision & Policy 2025”**
21. **“Implementation & Challenges of Pan India Emission Norms”** ECT 2013 the 5th International Conference organized at New Delhi on 6th - 7th September 2013.
22. “ECMA organized **“Free Pollution Under Control Check (PUC) Programs”** at BPCL and HPCL Petrol Pumps at New Delhi.

ECMA Members had unanimously elected Mr. R. P. Mittal (representing Delphi) as President and Mr. R. S. Mani (representing Corning) as Vice President to run ECMA. The registered office was initially opened at Greater Kailash, Part – I, New Delhi. Mr. B. R. Gosain was appointed as Executive Director to look after day to day activities of the association. The Resolution in this regard was passed and approved by the Association and submitted to the concerned department. After submission of the documents, ECMA office was established at Nehru Place, New Delhi in 2003. ECMA hosted its first official Inaugural Function at New Delhi wherein Dr. V. Rajagopalan, the then Chairman CPCB was the Chief Guest and over hundred dignitaries were present.

Going ahead, our association launched a CD on “**Worldwide Emission Standards 2004**” wherein exclusive data of Vehicle Emission Standards of twenty three countries and information related to Vehicular Pollution Control were put together. The work was well appreciated by the concerned stakeholders.

We organized the first International Conference on “**Asian Vehicle Emission Control Conference – AVECC 2006**” at Jaipur from 20th to 22nd September 2006 with the support of “The Association for Emissions Control by Catalyst (AECC)” and “The Manufacturers of Emission Controls Association (MECA)”. At the three days conference the senior Government Legislative officials, Vehicles Manufacturers, International experts in the field of emission control technology etc. had participated. On the side lines of the conference, an Exposition was also organized wherein Seven Organizations had displayed their products and shared their technologies.

ECMA got the permission from Ministry of Home Affairs to open “**FCRA Account**” to receive donations from abroad.

We launched Brand “Emission Control Technology (ECT)” and organized the 2nd International Conference on the theme of “**Emission Control Technology to Meet Year 2010 Norms and Beyond (ECT 2007)**” at New Delhi on 10th and 11th October 2007 wherein 250 plus delegates participated. This conference created an image for ECMA with the Industry.

ECMA sponsored SIAM’s conference “**TECHNEX 2008**” as a partner organized at New Delhi.



ECMA honoured to become a Member of the prestigious “**Standing Committee on Emission (SCOE)**” under Ministry of Road Transport and Highways on 29th December 2009. ECMA made representations at SCOE on various issues. The important issue of “Replacement of Catalytic Converters” was under deliberations with all stakeholders for quite some time.

ECMA stated its position that PUC operator is currently carrying out pollution control checks of vehicles as per CMVR 115. Further the OBD systems for Emission Control have already been implemented to take care of the Replacement of Catalytic converter. However SCOE has instructed test agency to carry out the study on the feasibility of Replacement of Catalytic Converters.

In the series on **International Conference**, Members decided to organize ECT Conference every alternate year. Accordingly, the third conference “**Emission Control Technologies to Improve Ambient Air Quality - Path Forward for**

India ECT 2009” was organized at New Delhi on 6th - 7th November 2009.

The first Roundtable Conference on “**Impact of PM Emissions and its Management**” was organized at New Delhi on 7th September 2010. Overwhelming response of the conference triggered off to organize such roundtable conferences in future covering specific emission related topics.



ECMA had sponsored the best M. Tech Project at ARAI Academy for batch 2011 during the SIAT 2011. The six best papers were finalized and the winner was awarded Rs. 1.00 Lac along with a citation and he also presented his paper during ECT 2011.



The success of ECMA's first roundtable conference encouraged us to host the second roundtable conference on the theme of **"After Treatment System / Design for BS – V Compliance"** in New Delhi on 6th September 2011.



ECMA organized its 4th International Conference **"After treatment Technologies 2013 and Beyond"** ECT 2011 at New Delhi on 9th - 10th November 2011. At this conference, for the first time 300+ Delegates participated.



First time, ECMA had launched a Research project **"Learning Initiative"** for PhD and M. Tech. students in March 2012. ECMA's Technical team had scrutinized the papers and three projects were selected.

The Authors of these projects were awarded and had presented their projects at our first Off Road Conference. We received over whelming response from the academia. The first and second winner of the papers were rewarded a cheque of Rs. 1.00 Lac each while the third prize winner got a cheque of Rs. 0.50 lac along with Certificates.



The “1st Off Road Conference” was specially dedicated to the Off Road Vehicle Industry and organized by ECMA on 3rd and 4th September 2012 at New Delhi. This was the first such conference in India; and was for two days. The conference had over 300 participants.



ECMA Celebrated Successful 1st Decade at a special Workshop from 16th to 18th December 2012 to discuss ECMA’s Vision, Mission and Action Plan for the next three years. Most of the Members participated at this important workshop. Participants suggested various key inputs to draw the roadmap about ECMA Future action plan. During the workshop, Members reviewed and finalized its **Vision** and **Mission**. Members discussed on various issues related to managing stakeholders, creating ECMA database and Knowledge hub, technology application Studies, opinion building and Communication etc.

ECMA decided to deliver its role and responsibilities through various committees under the supervision



of the Chairman of the committee. The functions of the committees are supported by the secretariat. Each committee addresses the issues of projects, government related activities, event management, internal & external communication and finance. ECMA participates in policy level discussions with Government agencies and submits its stand.

Members reviewed what had been done in the last 10 years, what achievements were made and missed. The Strengths, Weakness, Opportunities and Threats were put forth to develop the strategies.

An Expert Committee on “**Auto Fuel Vision and Policy 2025**” was constituted under the Chairmanship of Planning Commission, Government of India by Ministry of Petroleum and Natural Gas (MoP&NG). ECMA presented views on **Fuel consideration for meeting Euro V norms**. For the passenger cars Gasoline and Diesel, a Three Way Catalyst (TWC) with 10 ppm sulfur fuel and DOC + DPF with 10 ppm sulfur fuel respectively will be required. As regards Heavy Duty Diesel, SCR / (DOC+ Filter) with 10 ppm sulphur will be required. Overall Sulfur level needs to be controlled.

In the second presentation, ECMA clarified that there is no information on off-cycle Emissions in the field which in all probability are much higher due to use of higher Sulfur levels. Regarding Euro-V / BS-V compliance requirements, it was clear that at least for Light Duty Diesel (LDD) platforms, it is very

difficult to meet Particle Number and Particulate Standard in gm/km, with anything higher than 15 ppm Sulfur diesel.

The 5th International Conference on “**Implementation & Challenges of Pan India Emission Norms ECT 2013**” was organized at New Delhi on 6th & 7th September 2013.



Dr. Saumitra Chaudhuri, Member Planning Commission and the Chairman of the “Expert Committee on Auto Fuel Vision and Policy 2025” Inaugurated ECT 2013. The conference was well attended by Govt. Legislative Authorities, OEMs,

Academia, NGOs, Test Agencies, International Experts and other stakeholders.

The two days conference deliberated various issues related to Emission in India. We had eight Technical Sessions, wherein 33 Technical Experts presented Papers and one Closing Panel discussion comprising Senior Legislative Authorities, experts from Test Agencies, Petroleum Industry and consulting Agencies. Fourteen Organizations showcased their Technologies / Products at the Exposition and a Cultural program was also organized at ECT 2013.

ECMA organized a Free **Pollution under Control Check (PUC) Programs** as a part of Corporate Social Responsibility (CSR) to promote Clean Air and Pollution free Environment. The program was carried out for 15 days at BPCL petrol pump and another fifteen days at HPCL, New Delhi. The Chief Guest Mr. Abhay Bakre - ED PCRA inaugurated the program and Mr. G. Mukerji, GM BPCL was the Guest of Honour at BPCL pump. The officials of PCRA, BPCL, AVL and ECMA Members were present. At this pump a total of 1870 vehicles were checked from 20th January to 3rd February 2014.

The Chief Guest Mr. P. K. Goyal – Sr. Manager & State Level Coordinator (HPCL) inaugurated the 2nd PUC program at HPCL pump. The officials of PCRA, HPCL, MARS (Pentron) and ECMA Members were present. At this pump a total of 2255 vehicles were checked from 3rd March to 17th March 2014.



Evolution of Indian Emission Regulations

The first Indian emission regulations were idle emission limits which became effective in 1989. These idle emission regulations were soon replaced by mass emission limits for both gasoline (1991) and diesel (1992) vehicles, which were gradually tightened during the 1990's. Since the year 2000, India started adopting European emission & fuel regulations for four-wheeled light-duty, heavy-duty vehicles. India specific emission regulations still apply for 2/3 Wh. vehicles.

On October 6, 2003, the National Auto Fuel Policy had been announced, which envisaged a phased program for introducing **Bharat Stage II - IV** Emission and Fuel regulations by 2010. The implementation schedule of Emission Standards in India is summarized below.

Standard	Reference	Date	Region
India 2000	Euro 1	2000	Nationwide
Bharat Stage II	Euro 2	2001	NCR*, Mumbai, Kolkata, Chennai
		2003.04	NCR*, 11 Cities†
		2005.04	Nationwide
Bharat Stage III	Euro 3	2005.04	NCR*, 11 Cities†
		2010.04	Nationwide
Bharat Stage IV	Euro 4	2010.04	NCR*, 13 Cities†, 7 more Cities added ††

* National Capital Region (Delhi)

† Mumbai, Kolkata, Chennai, Bangalore, Hyderabad, Pune, Surat, Ahmedabad, Kanpur, Agra, Sholapur & Lucknow.

†† During 2011-2012, BS-IV fuels have been introduced in Seven additional Cities, namely; Puducherry (UT), Mathura, Vapi, Jamnagar, Ankleshwar, Hissar, Bharatpur (between January to March 2012)

Note:- 20 Cities were added vide draft G.S.R.278(E) dated 11th April 2014

Puducherry, Mathura, Vapi, Jamnagar, Ankaleshwar, Hissar, Bharatpur, Daman, Diu, Silvassa, Unnao, Rae Bareilly, Aligarh, Kamal, Valsad, Yamuna Nagar, Kurukshetra, Nizamabad, Medak and Mehboobnagar

What are the Emission Control Technologies?

Exhaust gas contains Carbon Monoxide (CO), Hydrocarbons (HC), Nitrogen Oxides (NOx) and Particulate Matters (PM). The main technologies used to treat exhaust to remove harmful gases and particles are:

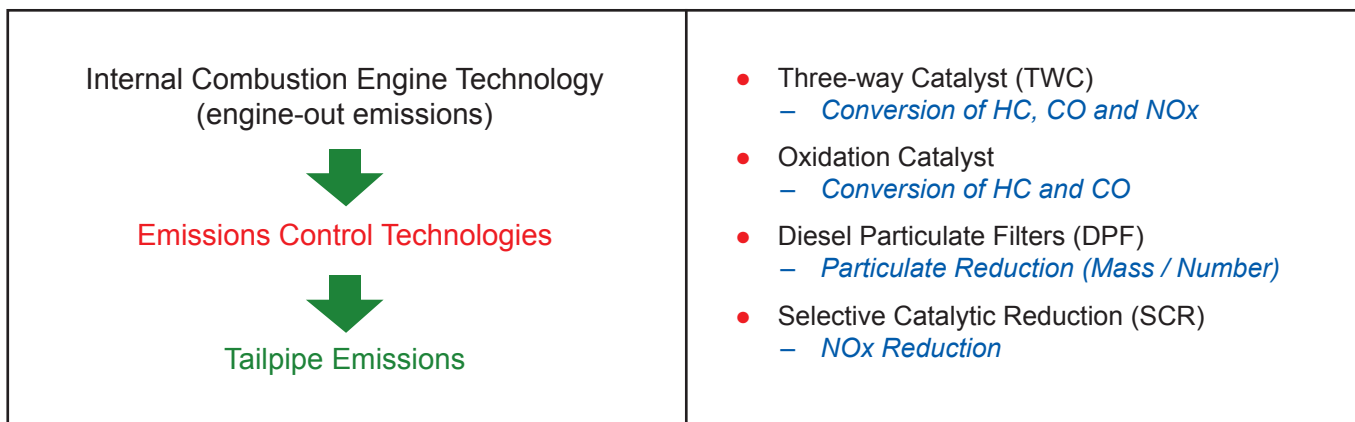
- Autocatalysts:** Three-Way Catalysts (TWC), Diesel Oxidation Catalysts (DOC), Selective Catalytic Reduction (SCR), Lean De-NOx Catalysts also known as hydrocarbon-SCR.
- Adsorbers (traps):** NOx Adsorbers Traps and Hydrocarbon adsorber systems.
- Filters:** Wall-Flow filters and Partial-Flow filters.

Catalytic Converters

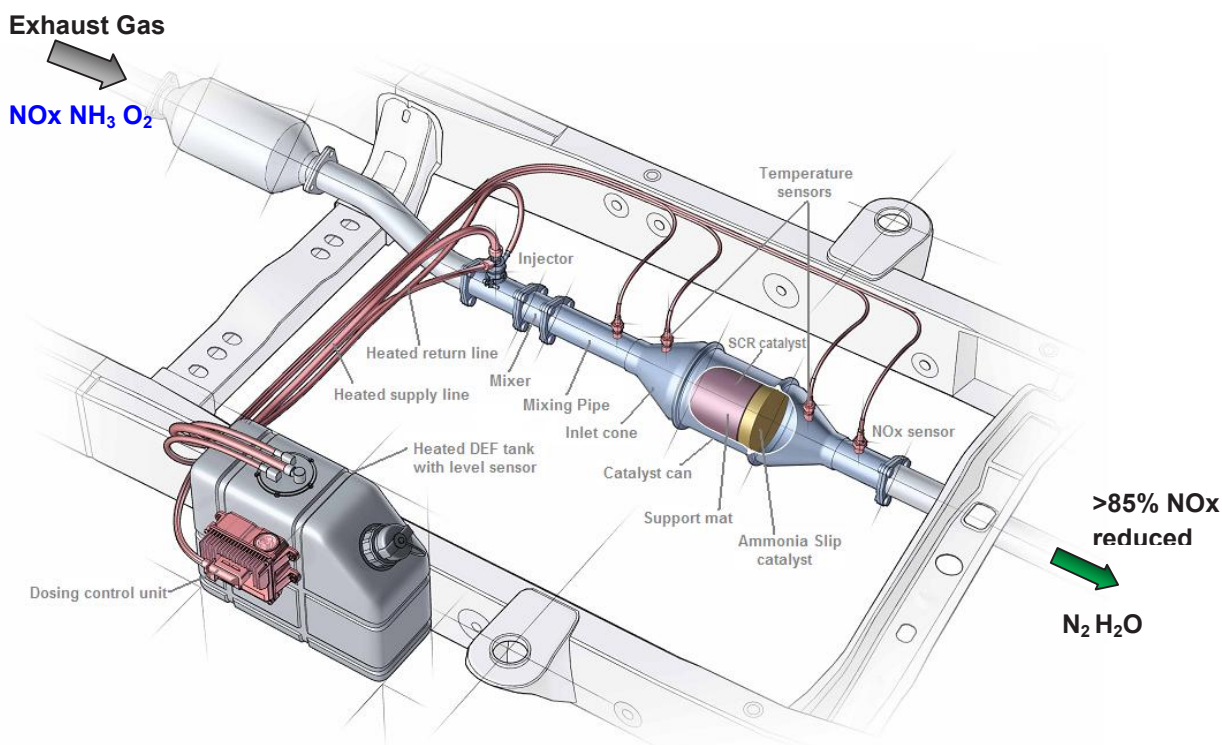
The term covers the stainless steel box mounted in the exhaust system. Inside is the autocatalyst - a ceramic or metallic substrate with an active coating incorporating chemical compounds (the wash coat) to support a combination of catalytical materials or minerals selected for their effectiveness in the required emissions reductions.

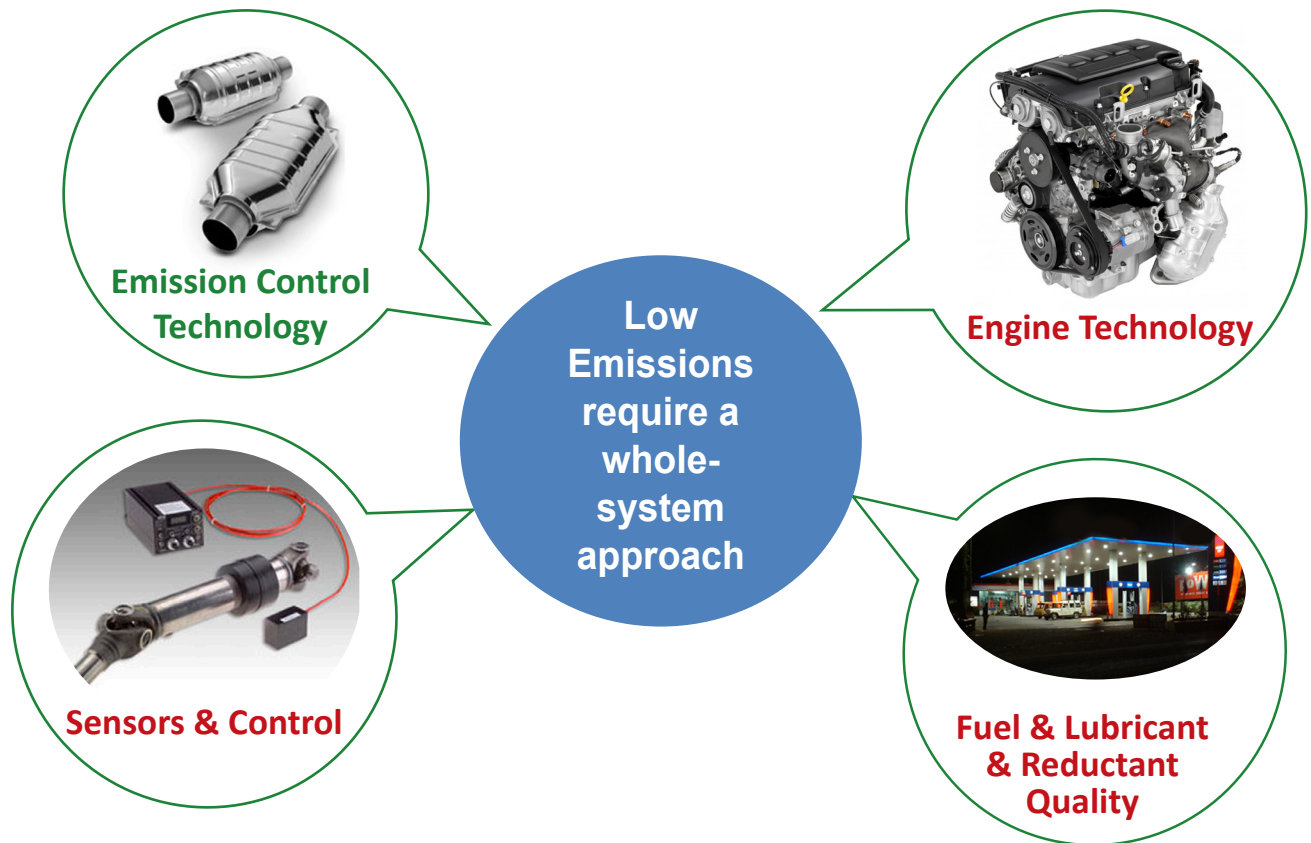
It can also be of homogeneous honeycomb ceramics in which only active compounds are extruded simultaneously. The autocatalyst is mounted in a can and is protected from vibration and shock by a resilient 'mat'. **The catalytic converter then looks similar to an exhaust muffler.**

Emissions Control Technologies



Urea SCR- System





ECMA

For more information, please contact us:

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